International Astronomy Day

April 25, 2015 | Robinson Nature Center

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Johns Hopkins Applied Physics Laboratory

NCESSE National Center for Earth and Space Science Education
Inspire... Then Educate

Space Telescope Science Institute
Operated for NASA by AURA

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James & Anne Robinson Nature Center

Howard County Recreation & Parks

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410-313-0400 | 6692 Cedar Lane, Columbia, MD 21044

Presenter Bios

Dr. Wayne Baggett became interested in astronomy as a child and went on to earn a PhD in Astronomy from New Mexico State University. He started his career with the Space Telescope Science Institute in Baltimore where he worked to ensure the proper operation of science instruments on the Hubble Space Telescope. He is now working to prepare the James Webb Space Telescope for launch. Dr. Baggett is also an active astronomer with the Howard Astronomical League (HAL). He joined HAL in 2002, serving as President in 2009 and as a vice president from 2010 - present. He is active in the preparations for HAL's observatory, which will be opening soon at Alpha Ridge Park in Howard County. He enjoys taking images of galaxies and other deep-sky objects with his 8-inch Newtonian telescope.

Dr. Christina Viviano-Beck is a staff scientist at the Johns Hopkins University Applied Physics Laboratory and has been working with CRISM data for about 7 years. She received her PhD from the University of Tennessee (Earth & Planetary Science) in 2012. Christina spends her time manipulating CRISM images and using them to explore ancient alteration processes on Mars. She is particularly interested in alteration of the crust, understanding the extent of water-rock interaction during ancient time periods on Mars, and tracing the metamorphic and hydrothermal history of the planet.

Dr. Debra Buczkowski is a planetary scientist at the Johns Hopkins University Applied Physics Laboratory. She specializes in the geologic mapping and structural analysis of rocky solar system bodies, and has performed studies of Mercury, Venus, Mars, Eros and Vesta. She is a science team member of the Dawn mission to Vesta and Ceres, and will soon begin an analysis of the dwarf planet Ceres.

Andy Calloway has over 20 years of experience in space mission operations and ground system development efforts. He began his career supporting multiple commercial and international geosynchronous communications satellite launches and operations in the early to mid-90's. He then spent six years supporting the Tropical Rainfall Measuring Mission, a low-Earth orbiting Earth resources satellite at NASA Goddard Space Flight Center, where he spent the last four years as the technical operations lead. He has been a member of the MESSENGER operations team since he joined JHU/APL in 2002 and has served as the Mission Operations Manager since January 2007. Andy is also a core team member of the New Horizons mission to Pluto, serving as the Deputy Encounter Mission Manager.

Dr. Nancy L. Chabot is a planetary scientist at the Johns Hopkins University Applied Physics Laboratory. She is the Instrument Scientist for the Mercury Dual Imaging System (MDIS) on the MESSENGER mission; chair of the mission's Geology Discipline Group; and leads MDIS-based scientific investigations of Mercury's polar, shadowed, likely ice-bearing craters. She has also been a member of five field teams with the Antarctic Search for Meteorites (ANSMET) program, and Asteroid 6899 Nancychabot is named in her honor.

Carolyn Ernst is a planetary scientist at the Johns Hopkins University Applied Physics Laboratory. Her research focuses on impact cratering and surface processes on planetary and small bodies. She is the Deputy Instrument Scientist for the Mercury Laser Altimeter (MLA) on board the MESSENGER spacecraft, is a member of the Long-Range Reconnaissance Imager (LORRI) team on New Horizons, and was recently selected to join the Cassini mission as a Participating Scientist.

Dr. Sethanne Howard is the first woman to receive a degree in physics from the University of California, Davis. She received a Master's Degree in nuclear physics from Rensselaer Polytechnic Institute and a PhD in astrophysics from Georgia State University. She worked with x-ray satellites at Los Alamos National Laboratory and the NASA/Marshall Space Center and managed several operating NASA astrophysics satellites and mission programs. She served as the National Science Foundation's Program Officer for Extragalactic Astronomy and Cosmology. She also served as the US Naval Observatory (USNO) Nautical Almanac Office Chief where she produced the book used as an international standard by the astronomical community.

Dr. Noam Izenberg has been a planetary scientist at Johns Hopkins University's Applied Physics Laboratory since 1997. He's interested in the processes that change the appearance and compositions of planetary surfaces. From the the solar wind and cosmic rays of "space weather" to the atmospheres, winds and waves of planetary weather systems, to impact craters and the internal processes of volcanism and tectonism, the surfaces solar system bodies are always evolving, and the different processes change the appearance of a surface in many different, and sometimes surprising ways. Dr. Izenberg has been an Instrument Scientist on the NEAR Shoemaker mission to the Asteroid 433 Eros, and the MESSENGER mission to Mercury, and has also studied Venus and Mars.

Dr. Joel Goodman (Stardoc) is the founder of the Celestial Searchers, a children's astronomy club in Howard County, and the Observatory Chair of the Howard Astronomical League. He is also a programmer in the NatureSphere/Planetarium at the Robinson Nature Center. Dr. Goodman mentors middle and high school students participanting in the Skynet Junior Scholars program that utilizes telescopes around the world to remotely conduct independent research. Dr. Goodman is committed to promoting and supporting astronomy and space education in the area.

Jessica A. Kenney is an outreach specialist for the Space Telescope Science Institute (STScI). She came to the Institute 5 years ago as an intern in the Student Astronomy Summer Program. As an outreach specialist in the Office of Public Outreach, Jessica has a dual role in creating outreach activities for the Hubble Space Telescope (HST) and the James Webb Space Telescope (JWST).

Mark "Indy" Kochte has always been interested in space and astronomy since he was a kid. To that end, he pursued a degree in Astronomy from the Ohio State University, and shortly thereafter joined the Hubble Project prior to launch of the space telescope, where he worked doing the data processing for Hubble. After 17 years of data processing and archiving, he took a position on the FUSE mission to do the planning and scheduling of that ultraviolet-viewing space telescope. In 2006 he was brought on board the MESSENGER mission as a Payload Operations Specialist, doing instrument and spacecraft commanding. More recently, he joined the New Horizons mission operations team as a Mission Analyst to cover the command sequencing of the Solar Wind Around Pluto (SWAP) plasma spectrometer.

Dr. Timothy A. (Tim) Livengood, Ph.D. is a planetary scientist who measures the composition, temperature, and wind velocity in planet atmospheres. Most recently, he has been using the Lunar Reconnaissance Orbiter to investigate where water may be hidden on the moon. He was a co-investigator of NASA's EPOXI mission, and was the education and public outreach team leader for EPOCh. Tim graduated from Towson Senior High School in 1980 and from Washington University in St. Louis in 1984. He finished a doctorate in physics and astronomy at the Johns Hopkins University in Baltimore in 1992. He moved to Goddard Space Flight Center in 1991 and has worked there ever since. He is also an active storyteller.

John Maple is an education specialist working in the Office of Public Outreach at the Space Telescope Science Institute. John has experience in teaching science and mathematics to a variety of students. Previously, John was a technology integration teacher and a fifth grade teacher for Baltimore County Public Schools as well as an adjunct professor at College of Notre Dame of Maryland.

Ryan McMichael works as an Optical Engineer at the Johns Hopkins University Applied Physics Laboratory (APL) where he designs, assembles, and tests optical space instruments. He has a degree from the University of Rochester and prior to coming to APL worked for NASA Goddard Space Flight Center supporting the testing of optical instrumentation. When not at work, Ryan participates in the APL astronomy club and also enjoys composing music, singing, and playing the piano, guitar, and saxophone -- both for solo projects and with his jazz pop duo "Cordell."

Dr. Alexandra Matiella Novak is a Senior Technical Professional Scientist at Johns Hopkins University Applied Physics Laboratory assisting with mission planning and planetary geology research. She received a B.S. in Geology from the University of California, Los Angeles in 2001, a master's degree in Geology from Michigan Technological University in 2004 and a Ph.D. in Geology, also from Michigan Tech, in 2008. In addition to her work as a scientist, she also enjoys getting people excited about planetary science by helping with outreach activities and visiting classrooms.

Gail Rohrbach has worked for 28 years at two NASA centers - the Jet Propulsion Laboratory in Pasadena, CA, and later at the Goddard Space Flight Center in Greenbelt, MD. She has participated in four NASA space telescope missions, covering the spectrum from infrared light, to visible, ultraviolet, X-rays, and even Gamma Rays. She helped to develop classroom teaching materials about space and astronomy for one of NASA's Education and Public Outreach departments and thoroughly enjoys sharing the wonders of the universe with her fellow Earthlings. Gail has a B.S. in Physics from Rensselaer Polytechnic Institute, with specializations in astrophysics and the history of science.

Kirby Runyon studies the movement of sand dunes on Mars and also cratering on the Moon. Additionally, he serves on two active space missions—the HiRISE camera onboard Mars Reconnaissance Orbiter and on the New Horizons mission to Pluto and its cadre of moons. His work doubles as his hobby, though he also enjoys recreational swing dancing and is active in his church. Kirby is a 3rd year PhD student in Planetary Geology at Johns Hopkins University and holds a Master's degree in Planetary Geology from Temple University. He has one cat, Nixie, named after Pluto's small moon, Nix.

Dr. Abigail Rymer joined APL from the Mullard Space Science Laboratory in the UK in 2005, shortly after the arrival of the Cassini spacecraft at Saturn. She is a member of two Cassini instrument teams and has worked extensively on Saturn's aurora, particle dynamics and moons. In 2010 Abi visited the Arctic where she and a small group of planetary scientists investigated the formation of the aurora borealis (the Northern Lights) at the Earth. The same year, Abi identified the first evidence for auroral emission due to ice volcanoes at Saturn.

Dr. Jennifer Scott is an Associate Professor in the Department of Physics, Astronomy, and Geosciences at Towson University. She teaches courses in astronomy and does research on quasars and the intergalactic medium with undergraduate students at TU. She lives in Howard County with her husband and two kids.

Melvin D. Smith II has taught science at the elementary and college level for 15 years. Currently, Melving instructs Bio 101 Laboratory classes with Howard County Community College (HCC); facilitates an after-school program called SciSense; and scripts/ hosts the HCC radio show sciNposts. Melvin enjoys spending time with his family, video games, and working with STEMulatingMinds as the group's web curator. Quietly, Melvin still wants to become an astronaut and go to the moon, something he's talked about since he was four years old.

Rachel Smith is a senior at Mt. Hebron High School involved in the Intern/Mentor Program where she works on her own original research on astronomy education in today's classrooms. She plans to attend the Rouse STEM Scholars Program in the fall to pursue astronomy and physics.

Lt. Col. Robert E. Terry, Ph.D. is the Director of Aerospace Education (A7A) for the Maryland Wing of the Civil Air Patrol. Robert E. Terry received the B.S. degree in physics from the Massachusetts Institute of Technology followed by the M.A. and Ph.D. degrees from Johns Hopkins University. Dr. Terry has worked on plasma radiation source (PRS) dynamics, power flow, plasma flow and reflex triode switches, magnetic interlayer pinches, gyrokinetic flows and microturbulence, RF discharge theory, plasma chemistry, and specialized wire z-pinch models. His current research interests include novel fluid particle models, polywell fusion schemes, in-situ fuel production for Mars, and Mars sample return missions. He is a charter member of the Mars Society and he maintains a local YAHOO discussion list (MARS_DC) focused on Mars exploration.

Dawn Turney is an Education & Communication Specialist for the Johns Hopkins Applied Physics Laboratory, making NASA science and technology accessible to students, teachers and the public. Prior to working for JHU/APL, Dawn was a middle school science teacher for eight years. She has also worked as an education specialist for World Wildlife Fund, a program specialist for The Audubon Society, an educator for Delaware State Parks, and a volunteer coordinator for Chesapeake Bay Girl Scout Council.

Dr. Edward Wollack enjoys pondering the rich tapestry of nature's patterns on scales great and small. By day, he conceives of and develops the next generation of "eyes" for astronomical instruments. Dr. Wollack's astrophysical research interests include galaxy formation, dark energy, and signatures of early Universe's relic radiation. More generally, he is fascinated by gravity and light as well as their interactions with matter. On clear dark nights he can be found peering into the depths of space.

Classroom 1

Magic Planet Demo – Join Dr. Alexandra Matiella Novak from APL to become a Space Explorer as we take a tour of our Solar System with the Magic Planet. From the Sun to Pluto and beyond, learn how the planets and moons in our Solar System are different and also how the more we observe our closest neighbors in space, the more we see similarities with Earth. Although this presentation is not hands-on, it is interactive and requires audience participation. Demonstrations last approximately 45 minutes and will be held at 10 AM and again at 10:45 AM.

Obsessed with Light: How Astronomers know about the Universe – Join Dr. Wayne Baggett of HAL to discover the fascinating study of spectroscopy. Using an R-Spec Explorer, Dr. Baggett will demonstrate how astronomers use spectroscopes to discover the history and make up of our universe. Presentations last 25 minutes and will be held at 12:30 PM and again at 1 PM.

The ABC's of Comets – Join Dr. Tim Livengood, NCSSE, to discover the wonders of comets. There will be a brief talk followed by a demonstration in which we make a comet. The full presentation will start at 1:45 PM and last around 45 minutes with time for questions.

Classroom 2

Astronomy through Story – Join Dr. Tim Livengood, NCSSE, to hear amazing tales of space and the science behind phenomenon like why the sky is dark. Stories include "Izzy and the Moon," "Old Bert's Pairs of Ducks" and "Sun & Moon Argue." Storytelling will begin at 10:30 AM and continue until 11:15 AM with breaks between stories.

Astronomy Trivia – Join Gail Rohrbach, NASA, at 11:30 AM or Dr. Edward Wollack, NASA, at 12:45 PM for rousing rounds of astronomy trivia. Form a team with friends and family or come test your individual smarts. Small prizes will be awarded. Trivia lasts half an hour.

Classroom 2 (continued)

Astronomy Way Too Close, How to Prepare for a Meteor Impact – Join Dr. Bob Terry, Civil Air Patrol, to examine an example of a meteor threat and characterize the pre- / post- impact mitigation strategies that might prove effective based on information from the 2015 IAA Planetary Defense Conference. The presentation will start at 1:30 PM and last approximately 40 minutes.

How Big's That Hole and Why? – Join Dr. Bob Terry, Civil Air Patrol, to investigate first-hand the relation between projectile energy and crater volume using a simple technique with colored sand and steel balls. See how fast your lab techniques can meet this deceptively simple challenge. The presentation will start at 2:15 PM and last approximately 40 minutes.

Auditorium North

Dawn: The Investigation of the Dwarf Planet Ceres & the Asteroid Vesta – Join Dr. Debra Buczkowski of APL to find out more about the "Dawn" mission, the discoveries made at the asteroid Vesta, and new discoveries made at the dwarf planet Ceres. Presentation will start at 10:45 AM and will last 30 minutes with a chance to meet Dr. Buckowski afterwards in Auditorium South.

New Adventures with James Webb Space Telescope – Join Jessica Kenney & John Maple of STScI to learn about the James Webb Space Telescope (JWST) to be launched in 2018. Participate in a hands-on demonstration with an infrared camera similar to the one used in space telescopes. Presentation and demo will last 30 minutes and will be held at 11 AM and 12:30 PM.

CRISM: the Martian Mineral Detective – Join Dr. Christina Viviano-Beck, APL, as she reveals details about the CRISM instrument and its discoveries after 9+ years of orbiting Mars. She will describe the advances CRISM has contributed to in understanding the geology of the planet and changes in the environmental conditions as

Mars evolved into the dry planet we observe today. Presentation will start at 1:15 PM and will last 30 minutes with a chance to meet Dr. Viviano-Beck afterwards in Auditorium South.

Exploring Mercury with Images from MESSENGER – Join Dr. Nancy Chebot to explore the planet MERCURY through images. In 2011, the MESSENGER spacecraft became the first ever to orbit the planet Mercury, and in the last four years, the mission has acquired over 250,000 images of Mercury's surface and created the first global maps of the Solar System's innermost planet. Presentation will start at 2 PM and will last 30 minutes with a chance to meet Dr. Chebot afterwards in Auditorium South.

New Horizons: The Adventure to Pluto - Join "Indy" to explore the planet Pluto. Planet or dwarf planet, does it really matter? Pluto has long been considered an oddball planet since its discovery, but over the decades we've learned much about what it is and isn't. And soon, this summer, the New Horizons spacecraft will be the first manmade craft from Earth to visit this unique world of our solar system. Join 'Indy' (A.K.A. Mark Kochte) on a journey of wonder from the time Pluto was first discovered until present day. Presentation will start at 2:30 PM and will last 30 minutes with a chance to meet Indy prior to the presentation at 12:45 PM in Auditorium South.

Auditorium South

All activities in Auditorium South are ongoing throughout the day unless otherwise noted.

"Meet the Scientist" table– After talks in the auditorium, audience members will have a unique opportunity to meet and speak with APL scientists one-on-one.

MESSENGER maneuvers table – Join Andy Calloway, APL, as he demonstrates how the MESSENGER spacecraft is conducting its final maneuvers leading up to impact with the planet Mercury on April 30th. As liquid propellant runs out, the final maneuvers use only the remaining Helium pressurant. See this concept in action in a yummy down-to-Earth way using cans of whipped cream. This activity runs from 10 AM to 11:30 AM.

Infrared Camera table – Join Ryan McMichael, APL, as he demonstrates an Infrared/ Thermal Camera. The camera is a portable instrument capable of capturing video-rate images in the Long-Wave Infrared and is used in many space missions. In this wavelength range, your body temperature can be detected over the background of ambient room temperature. Come see yourself in "thermal" view!

Dress Like An Engineer table – Have you ever dreamed of becoming an engineer or designing and building spacecraft for NASA? Join Dawn Turney, APL, to try on a real engineering clean room suit and discover what it feels like to be an APL engineer. Learn how engineers keep instruments safe as they build and test. Hear about APL's exciting engineering accomplishments and upcoming missions to explore some of the harshest regions of space. This activity will be ongoing from 10 AM to Noon.

Crater-making table – Join Carolyn Ernst, APL, to discover how craters are formed and try out creating your own crater impacts using objects of different sizes. This activity will be ongoing from 10 AM to Noon.

Big Picture table – Have you ever wondered how we have such beautiful high-resolution photos of moons and other planets? These "big" pictures are actually made from hundreds of smaller pictures captured through space satellites and telescopts. Join Noam Izenberg, APL, to test your hand at creating a big picture of the surface of the planet Mercury. This activity will be ongoing from 1 PM to 3 PM.

Lobby & Balcony

Galaxy Zoo table– Join Dr. Sethanne Howard to discover distant galaxies through the "Galaxy Zoo". The Galaxy Zoo is a citizen science project that allows you to classify galaxies with astronomers. Your date will be submitted to the Sloan Digital Sky Survey. This activity will be ongoing from 10 AM to noon.

Eggdrop table– .Join Rachel Smith, HCPSS, to test your skills at designing a space capsule that safely delivers its contents (an egg) when dropped from our balcony! This activity is ongoing throughout the day.

Green Roof & Front Entrance

All activities in these areas are ongoing throughout the day unless otherwise noted.

Sun-viewing table – Come view the sun safely with Jennifer Scott, Towson University, through Sunspotter projection telescopes (weather-dependent). View sunspots and find out more about the solar cycle, as well as magnetic activity on the Sun and how it relates to the aurora borealis.

Safe-solar viewing – Join members of the Howard Astronomical League (HAL) to safely view the sun using special filters (weather-dependent) and to discover more about HAL's mission.

Art for Aliens table - In the early 1970s, the NASA space program sent satellites out into space with the idea to communicate with intelligent life outside our solar system. On these satellites were special records that described who we are as a human race (what we generally look like, what planet we live on, and even a code for our language). If you were to become an engineer and artist for a similar project, what would you like to have other life forms know about us? Using the various items to imprint your picture on foil, make your ideas known! See the finished project that will be showcased in the STEMulatingMinds' art gallery on June 7th at Howard Community College.

Lala's Hot Dog stand - If you're hungry, come grab a bite from this local institution serving various styles of hot dogs and ice cream. We ask that you enjoy your food at the outdoor tables on the green roof or mezzanine patio.

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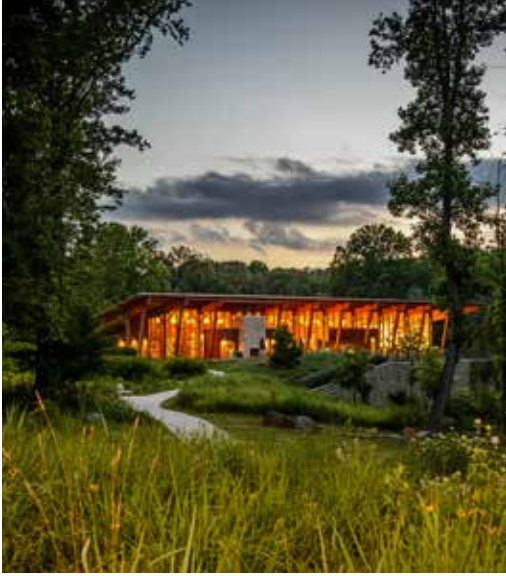

JAMES & ANNE Robinson NATURE CENTER

6692 Cedar Lane
Columbia, MD 21044
410-313-0400

Hours

Wednesday-Saturday: 9 AM-5 PM
Sunday: Noon-5 PM
Closed on Mondays & Tuesdays

Daily Admission

Adults: $5
Children (3-17 yrs): $3
Under 3: FREE
* Wednesdays are complimentary for families and individuals. Group visits are subject to admission fees and must be booked in advance.